REMARKS/ARGUMENTS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments, and the following remarks. Claims 1-10 are in the application. Claims 1, 5 and 8 have been amended. No new matter has been added.

The Examiner rejected claim 5 under 35 USC 112, stating that the term "substantially" is unclear. Applicant respectfully traverses. The term "substantially" refers to the capability to train once (using one representative device out of a batch) and to be "substantially" able to correct all types of image defects, excluding extreme cases. Applicant has amended claim 5 to delete the term "substantially" and to clarify that the quality of the image formation of the image formation system corresponds to the quality of image formation of the image formation system to be corrected if the errors to be corrected are greater than the device-by-device variances of the image defects to be corrected.

The Examiner stated that claim 7 would be allowable if rewritten in independent form; however, the remaining cliams were rejected on the basis of the prior art. Specifically, the Examiner rejected claim 1 under 35 USC §102 as being anticipated

by Goto. Claim 2 was rejected over Goto in view of Bush. Claim 3 was rejected over Goto in view of Gaborski. Claims 4 and 5 were rejected over Goto in view of Eouzan. Claim 6 was rejected over Goto in view of the publication to Krell. Claims 8-10 were rejected over Nakano in view of Eouzan.

This rejection is respectfully traversed.

Neither Goto nor the other references relate to image correction in the sense of correcting the optical defects (i.e., differences between the real object imaged versus the digital image generated by the device) of imaging devices.

The process of the present invention is a process that corrects image defects in the sense of correcting digital images by using the knowledge about the defects of the optical device creating the digital images. The knowledge about the specific defects is determined in the training process using test images and comparing them with the digital images generated by the device.

The image correction covers all image defects (i.e. image

difference versus real object) of optical devices and also covers each color and the interferences and coupling of different distortion classes (out of focus, geometrical distortions, color channels) at the pixel level.

The distinctiveness of the invention becomes very evident when considering the added and unique image defects generated in rear projection display devices having folded optics and/or optically active screens or fresnel lens-based direct imaging user interfaces to view the images. Such device concepts that are emerging as frameworks for next generation high definition projection TVs and also 3D displays are also suffering from image defects due to the wavelength related differences in the optical path of color images.

The image correction process according to the invention is capable of correcting such defects in combination with other defects in one integrated process. The invention provides the means to use low cost optical components and image distorting system designs (like those used to make rear projection displays flatter) while ensuring good image quality in the eyes of the device user.

Goto corrects only for colors, in that color differences are made less noticeable. Claim 1 has been amended to define that the image errors being corrected are deviations between an image of predetermined quality and its reproduction. The considered image errors are caused by optical device defects. Support for this amendment can be found throughout the specification, and in particular, on pages 1-2.

In contrast, the neural network of Goto converts into a color-corrected signal. The neuronal network of the invention does the opposite: the error-free image is falsified by the neural network. Only because the neural network compensates for the behavior of the image forming system, does the image forming system produce a corrected image. Colors of the output device are not corrected by Goto. Goto corrects images by using neural networks during the correction process.

The image correction process of the present invention consists of two distinctively different process steps such as a) a training process using neural networks and b) a realtime image correction process enabled with low cost hardware implementation and with processes that do not require the use of any neural

network.

Eouzan interferes with the digital control circuits. There is no coupling between the color channels as in the present invention.

In claim 6, a linear network is required to work at different illumination levels. It can be therefore mono-layered to save computing effort because any linear multi-layer network can be converted into a mono-layered network with the same function.

Regarding claims 8-10, claim 8 has been amended to clarify that the inputs are for the picture elements of the device, and the pixel values are fed to the inputs. In Nakano, only separate color reproduction, and no coupling between the channels, is considered. The colorimetry device of Nakano neglects any geometric defects, neighborhoods between the pixels or convergence effect.

Accordingly, Applicant submits that claims 1-10 are patentable over the cited references, taken either singly or in combination.

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